Unincorporated

Sonoma County

Commitments to meeting community greenhouse gas reduction goals.

5.10 Unincorporated Sonoma County

This section presents the community greenhouse gas (GHG) emissions profile specific to the unincorporated county and the measures that the County of Sonoma will implement, with the support of the RCPA and other regional entities, as part of the regional approach to reducing GHG emissions.

5.10.1 Community Summary

The unincorporated portion of Sonoma County includes all areas not within the jurisdictional limits of Cloverdale, Cotati, Healdsburg, Petaluma, Rohnert Park, Santa Rosa, Sebastopol, Sonoma, or Windsor. Located in Northern California in the heart of Wine Country, Sonoma County has a unique position near the Pacific Ocean and the San Francisco Bay Area. Sonoma County is renowned for its scenic landscapes—from open hillsides, plentiful valleys, celebrated vineyards, and agricultural lands to the Russian River and the picturesque Sonoma Coast. The geographic features and climatic variation of Sonoma County contributes to its success in wine production and other agricultural activities. Sonoma County's land uses reflect the residential and rural values of the county while supporting strong local industries.

Demographics

The unincorporated county covers approximately 1,684 square miles (the entire county is 1,768 square miles) and has largely residential, commercial, and agricultural land uses. The unincorporated county had a population of 121,281 as of the 2010 census. In 2020, the population is expected to be 124,100, an increase of 2% compared to 2010. Employment in the area is expected to increase by 14%.

The countywide demographic composition in 2010 was 87% White, 0.5% African American, 0.5% Native American, 3% Asian, 0.2% Pacific Islander, 7% from other races, and 2.5% from two or more races (demographic composition data for the unincorporated county is not available). Persons of Hispanic or Latino origin were 15%.

As shown in Table 5.9-1, the unincorporated portion of the county is expected to experience steady growth in population, housing, and jobs in the future.

Table 5.9-1. Unincorporated County Socioeconomic Data

	Actual					
	1990	2010	2015	2020	2040	
Population	146,796	121,281	123,025	124,100	134,121	140,390
Housing	54,633	49,049	49,933	50,894	55,234	57,755
Employment	45,413	41,486	44,367	47,257	49,852	51,579

Socioeconomic data were derived from the SCTA travel demand model and incorporate input from the County based on its internal planning forecasts.

According to the 2010 Census, housing in the unincorporated areas of the county is majority owner-occupied with 63% of all housing units owned and 37% rented.

Energy and Water Use

Compared to households in the county as a whole, households in the unincorporated areas use less natural gas but more electricity and water. Households in the unincorporated county are, overall, located in more rural areas, which are generally less efficient than households located in more urbanized areas. Larger, more rural houses typically have a higher water footprint because of increased landscaping needs. Unincorporated county households use less electricity, natural gas, and water than households statewide, however.

Table 5.9-2. Unincorporated County, Total County, and State 2010 Average Energy and Water Use (per household, per year)

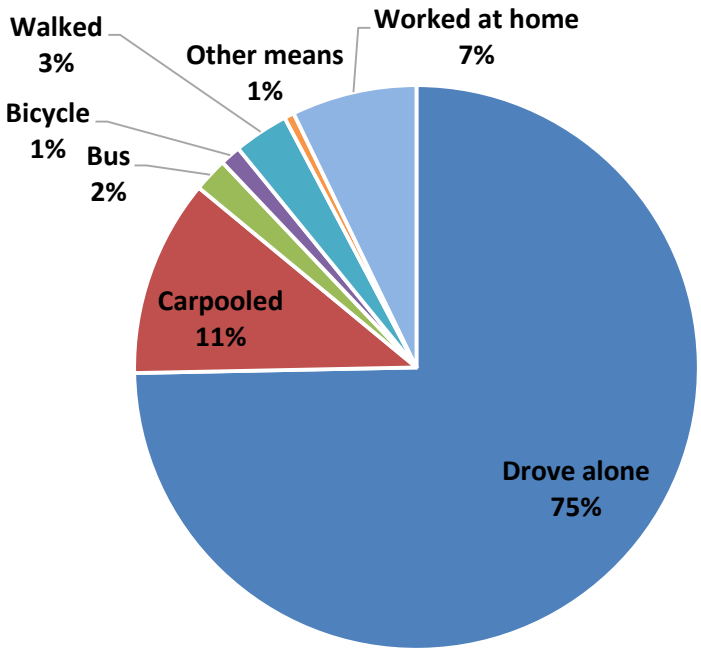
	Unincorporated Sonoma County	All County	State
Electricity (kWh)	9,207	7,042	9,320
Natural Gas (Therms)	375	413	512
Water Use (Gallons)	93,365	75,810	107,869

Sources:
City Data: provided by PG&E (energy) and by the SCWA Urban Water Management Plan.
County Data: provided by PG&E (energy) and the cities or their Urban Water Management Plans (water).
State Data: U.S. Energy Information Administration 2009, U.S. Geological Survey 2014, California Department of Finance 2015.
kWh = kilowatt hours

Transportation Commute Modes

In the inventory year 2010, most unincorporated area residents (75%) drove alone to work and about 11% carpooled, which is similar to other Sonoma County communities. The average trip to work for the total county, including unincorporated and incorporated areas, is 25.3 minutes (U.S. Census Bureau 2014).

Figure 5.9-1. Modes to Work in the Unincorporated County in 2010



Source: U.S. Census Bureau 2014: American Community Survey 2006–2010

5.10.2 The County's Existing Actions to Reduce GHG Emissions

The County has already taken a number of steps to reduce energy use, promote renewable energy use, and other actions that have already been helping to reduce GHG emissions. The County has also implemented projects and adopted ordinances and General Plan policies that would also help to reduce GHG emissions and will support the implementation of the formal GHG reduction measures in this CAP. These are summarized below.

- Building Energy
    - CALGreen Building Standards Code: County Code Chapter 7. Tier 1 measures for residential and non-residential structures adopted as mandatory.
    - Comprehensive Energy Project on County Facilities. Conservation measures employed at County facilities: Upgraded lighting technology, thermal energy storage, variable speed controls, and HVAC improvements.
    - Residential Retrofits: CDC retrofitted 1073 homes through housing/mobile home rehabilitation programs.
    - Property Assessed Clean Energy (PACE) Program: Via AB 811 and SB 555 property owners may finance energy and water efficiency and conservation, and renewable generation improvements to existing homes and business properties via a special voluntary property tax assessment.

- Sonoma PACE Financing Marketplace: The offering of multiple PACE financing products to property owners in the county including products such as the County's SCEIP, California FIRST, California HERO, and Figtree Finance.
- PACE Program Permitting and Inspection Procedures: Special permit procedure for energy and water conservation improvements financed through PACE; permitting for building projects not typically requiring permits.
- County of Sonoma Energy Independence Office: Serves as a community clearinghouse of information, tools, services, programs, financing information, and resources for the general public, contractor communities, and other public entities engaged in pursuing energy and water efficiency and renewable energy initiatives. The office operates and administers County programs including the Sonoma PACE Financing Marketplace (including SCEIP), Energy Watch Program, Green Business Program, Windsor Pay-As-You-Save, and the residential rebate program for Healdsburg Electric.
- Sonoma County Energy Watch (SCEW): a local government partnership between the County of Sonoma's Energy and Sustainability Division and PG&E designed to reduce energy usage and expenses. The program provides energy efficiency services to local governments, special districts, nonprofit organizations, and small to medium businesses. These services include: no-cost energy audits, technical assistance, project consultation, enhanced rebates and incentives, and an on bill financing option. Between the program's inception in 2009 and the end of 2014, nearly $2 million in incentives have been paid to over 470 projects. The resulting energy savings are estimated to be 10,500,000 kWh/year.
- Sonoma County retrofit/renewables program: This program provides residential and commercial property owners with one-stop success to energy analysis, certified vendors, and a financing package for solar and energy efficiency retrofit projects, working in collaboration with SCEIP and leveraging that existing resource.
- Solar photovoltaic electrical generation at County facilities to augment county needs. 750 kW solar energy system plus 706 kW system at the Los Guilicos Juvenile Justice Center. The two PV systems are designed to generate enough clean energy to cover 100% of the campus electricity bills. This represents the average electricity use of 105 homes and is expected to reduce GHG by 324 metric tons over its 25-year life.
- The County's General Services Department has implemented 38 County facility energy efficiency projects on 24 different County-owned buildings. This work will ultimately save $41.6 million in energy use over the lifetime of the improvements.
- Landfill Gas Power Plant: produces over 7 megawatts (MW) of renewable electrical energy 24 hours/day, 7 days/week, enough to power a community of 17,000 people. The electricity is sold to the Power and Water Resources Pooling Authority, which provides carbon-free electricity to SCWA, among other entities. A BioGas Filtration Plant (also called the CNG plant) was completed in February 2009. CNG produced at the Central

Disposal Site is currently used to fuel select vehicles in the Sonoma County Transit bus fleet. The plant uses membrane filtration to convert landfill gas to vehicle fuel.

- Sonoma Clean Power Community Choice Aggregation (CCA): Several cities and the County formed SCP to provide electricity with a higher percentage of non-fossil fuel energy sources. Transmission, distribution, customer service and billing remain the same, delivered through the existing utility (PG&E).
- Hydropower: The Warm Springs Dam was completed in 1984, a hydroelectric turbine was installed a few years later and has been producing electricity since the late 1980s. This turbine has a generation capacity of 2.6 MW. Since energy production is influenced by the flow of water through the dam, actual energy production is usually at about 1.3 MW. Actual annual energy production from 2006 to 2008 was approximately 11,800 to 14,800 megawatt-hours.
- In 2013 the Sonoma County Zoning Code was amended to enable the construction and use of renewable energy facilities including bioenergy, geothermal, solar, wind, cogeneration, and similar technologies. Uses are now classified into two categories of Accessory systems and Commercial Facilities allowing streamlining with special use standards.

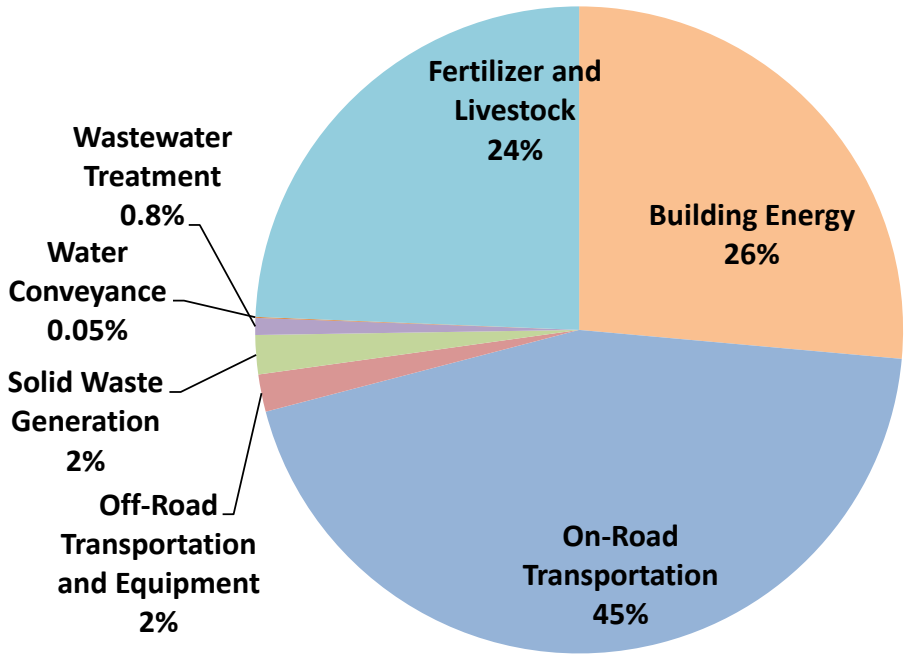
- Land Use and Transportation
  - Fleet Operations Division: Sonoma County was awarded the 2013 Government Green Fleet Award.
  - Sonoma County Transit Fleet changes:
    - In 1990, Sonoma County's transit and paratransit fleets were 100% diesel powered. In 1996, the transition to CNG buses began with the addition of 15–40-foot heavy-duty coaches.
    - In 2000, approximately 31% of the Sonoma County Transit fleet was powered by natural gas and diesel vehicles dropped to 57%. During this period, more gasoline powered minibuses were introduced into the fixed-route fleet, representing approximately 12% of the fleet makeup.
    - By 2010, all of the County's 30- and 40-foot heavy duty coaches had transitioned to CNG, representing 92% of the fleet. The remainder of the fleet comprises small gasoline-powered minibuses. The 2013 fleet composition remains the same as 2010; however, the average vehicle age has decreased. With the delivery of nine new (replacement) 40-foot CNG buses in 2014, the fleet total will remain the same, but the average vehicle age will again decrease.
- Waste Minimization and Recycling
  - AB 939 compliance for solid waste generation and diversion, which requires California cities, counties, and approved regional solid waste management to divert 25% of their solid waste by 1995 and 50% by year 2000 and afterward.

- Sonoma Green Business Program: Provides certification and resources for small to medium-sized consumer-oriented businesses that express a desire to contribute to sustainability efforts through resource conservation.
- Recycling Market Development Zone Program (RMDZ): Businesses that use recycled material in their products, and are located within RMDZs, are eligible for loans, technical assistance, relaxed building permits, and other incentives. The program originated from CalRecycle, but is administered at the local level by zone administrators throughout the state.

- Water and Wastewater Efficiency
  - Reduced size and cost of standard septic systems when low flow plumbing fixtures are installed.
  - Sonoma County Water Efficient Landscape Ordinance: County Code Chapter 7D3. Regulates the design, installation, and maintenance of new and rehabilitated landscapes in terms of plant selection, soil amendments, water features such as recycled water, and irrigation systems.
- Agriculture, Urban Forestry and Natural Areas
  - Open Space Conservation: Over 250,000 protected acres in the County, including 106,000 acres protected by the Sonoma County Agricultural Preservation and Open Space District as well as lands protected through other programs, including agricultural land preservation through the County's ongoing participation in the Williamson Act.

5.10.3 Greenhouse Gas Inventory and Forecast

Figure 5.9-2. Unincorporated Sonoma County 2010 Community GHG Inventory by Sector



The unincorporated area's inventory is similar to cities in the county and state in many respects. The majority of the GHG emissions are from the on-road transportation sector due to fossil fuel combustion in personal and light-duty vehicles. The next largest sector is building energy, which includes emissions related to energy used to heat the homes, and business in the county. Most energy consumption in the unincorporated areas of the county is for residential purposes, with 57% of building energy emissions resulting from residential uses. Commercial energy use emissions account for 39% of building energy emissions. Emissions resulting from energy consumed for industrial purposes are a small fraction (4%) of total energy use emissions in the community. Another large component of the unincorporated county's inventory is emissions from agricultural activity. This source of emissions includes direct emissions from livestock and manure, and emissions that are emitted from the use of fertilizer on crops. The other categories of emissions are much smaller in comparison to building energy, on-road transportation, and agriculture.

In the unincorporated county, total GHG emissions generated by community activities in 2010 were 1,004,510 $MTCO_2e$, which is approximately 39% of countywide GHG emissions in the same year. This is a 19% decrease from estimated 1990 emissions, which were 1,244,320 $MTCO_2e$. The decrease in emissions from 1990 is partly due to a decrease in population, employment, and housing for the unincorporated county, as the cities annexed unincorporated land into their limits. Therefore, a portion of the reduction in emissions is due to changes in the jurisdictional boundaries of the cities, and not actually due to a decrease in emission-generating activities within the unincorporated areas.

Table 5.9-3. Unincorporated Sonoma County Community GHG Backcast, Inventory, and Forecasts

Sector	1990 Backcast		2010 Inventory		2015 Forecast		2020 Forecast		2040 Forecast		2050 Forecast	
Building Energy	502,330	40%	350,950	35%	386,270	36%	401,390	36%	430,210	36%	447,780	37%
On-Road Transportation	519,670	42%	590,970	59%	612,650	58%	657,210	58%	688,330	57%	680,920	56%
Off-Road Transportation and Equipment	26,550	2%	24,780	2%	27,010	3%	29,600	3%	43,640	4%	44,380	4%
Solid Waste Generation	170,730	14%	25,900	3%	27,140	3%	28,320	3%	30,140	2%	31,320	3%
Wastewater Treatment	13,610	1%	11,240	1.1%	11,400	1%	11,500	1%	12,430	1%	13,010	1%
Water Conveyance	11,440	1%	660	0.1%	780	0%	790	0%	850	0%	890	0%
Total	**1,244,320**	**100 %**	**1,004,510**	**100%**	**1,065,260**	**100 %**	**1,128,810**	**100%**	**1,205,610**	**100 %**	**1,218,310**	**100 %**
Per-Capita Emissions	**8.5**		**8.3**		**8.7**		**9.1**		**9.0**		**8.7**	

5.10.4 Greenhouse Gas Reduction Goal and Measures

The County of Sonoma in representing the unincorporated portion of the county joins the other Sonoma County communities to support the countywide GHG emissions reduction target of 25% below 1990 countywide emissions by 2020 through adoption of 24 local GHG reduction measures. The county's GHG emissions under 2020 BAU conditions (in absence of state, regional, and local measures) would be approximately 1,128,810 $MTCO_2e$. The county's local GHG reduction measures, in combination with state and regional measures, would reduce the county's GHG emissions in 2020 to 774,530 $MTCO_2e$, which would be a reduction of approximately 33% compared to 2020 BAU conditions. The county will achieve these reductions through reduction measures that are technologically feasible and cost-effective per AB 32 through a combination of state (66%), regional (19%), and local (11%) efforts. Per-capita reductions in the county in 2020 would be 2.9 $MTCO_2e$ per person.

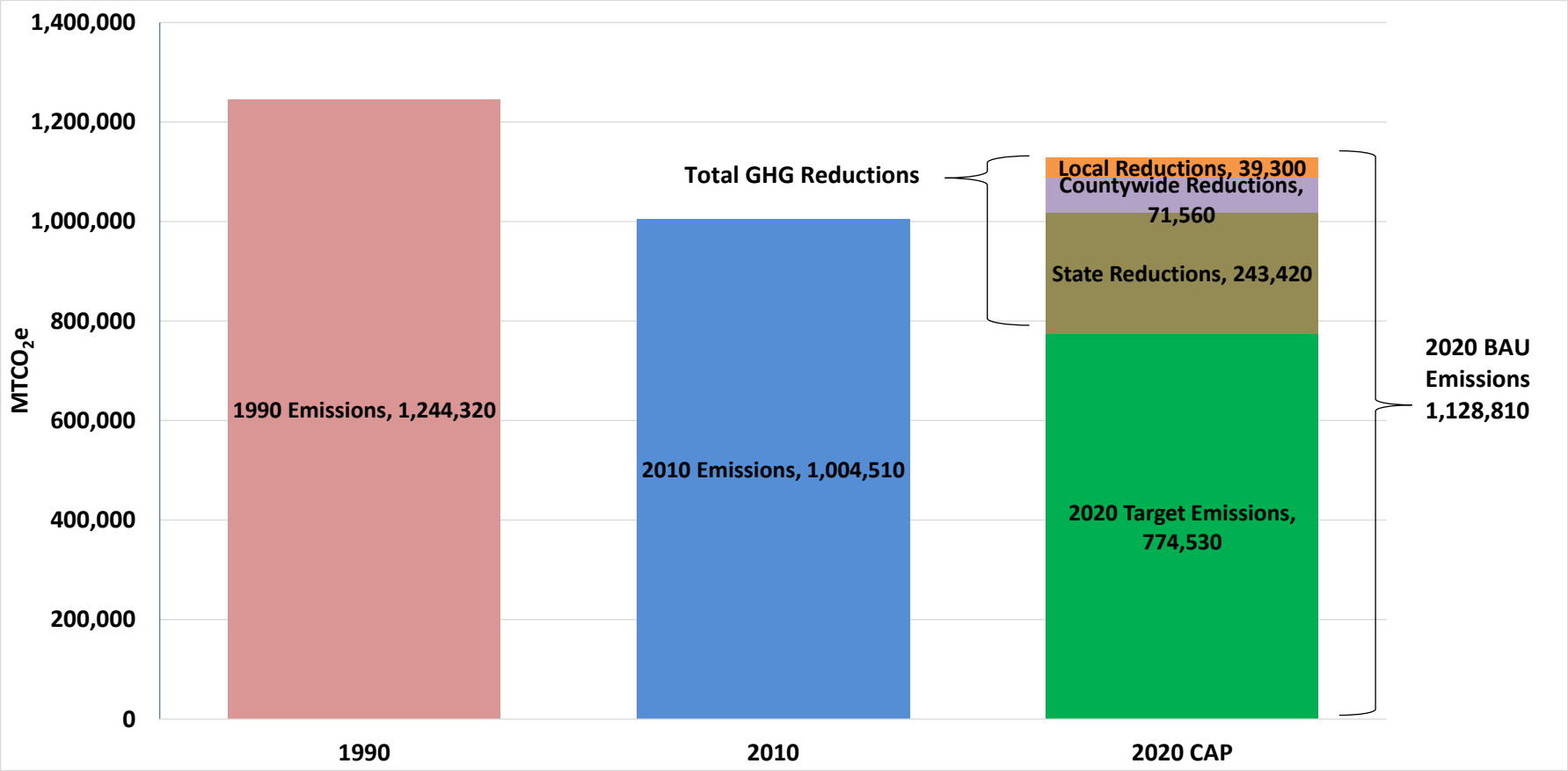
Table 5.9-4. Unincorporated Sonoma County 2020 BAU GHG Emissions Reductions by Sector

Sector	2020 BAU Forecast	Reductions				2020 CAP Emissions	% Reduction
		State	County-wide	Local	Total		
Building Energy	401,390	100,930	33,000	23,060	156,990	244,400	39%
On-Road Transportation	657,210	139,870	17,450	14,730	172,050	485,160	26%
Off-Road Transportation and Equipment	29,600	2,620	-	110	2,730	26,870	9%
Solid Waste Generation	28,320	-	20,570	-	20,570	7,750	73%
Water Conveyance	790	-	550	70	620	170	78%
Wastewater Treatment	11,500	-	-	1,330	1,330	10,170	12%
Total Emissions	**1,128,810**	**243,420**	**71,560**	**39,300**	**354,280**	**774,500**	**31%**
		69%	**20%**	**11%**			

Values may not sum due to rounding.

Figure 5.9-3 shows the county's 1990 and 2010 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after implementation of the county's reduction measures. The contribution of state, countywide, and local reductions are overlaid on the 2020 BAU emissions forecast total, representing the total emissions reductions achieved in 2020. As noted above, the decrease in emissions from 1990 is partly due to changes in the jurisdictional boundaries of the cities, and not actually due to a decrease in emission-generating activities within the unincorporated county.

Figure 5.9-3. Unincorporated Sonoma County 1990, 2010, and 2020 GHG Emissions; 2020 State and Local Reductions



Greenhouse Gas Reduction Measures

As shown in Table 5.9-5, the County of Sonoma will achieve its reduction goal through a combination of state, regional, and local measures. State reduction measures are implemented through state law, including some that require action by the County to comply with state mandates (e.g., Title 24 energy efficiency measures). State reductions total 243,420 $MTCO_2e$, which include the Pavley vehicle standards, Title 24 building standards, the state's low carbon fuel standard, and the RPS.

Regional measures will reduce emissions by 71,560 $MTCO_2e$ and will be implemented by countywide entities, including RCPA, SCWA, County of Sonoma Energy Independence Office, SCTA, and SCP.

An additional reduction of 39,300 $MTCO_2e$ will be achieved through local measures. The locally adopted measures, although not as high-achieving of GHG reductions as the state and regional measures, are important because they represent the actions that local communities can take directly. The communities have local control over their infrastructure and policies and have selected the local measures that best suit the needs of their community.

The three measures that will have the greatest impact in the unincorporated county are, in order of importance, Measure 15-L1 (Methane Capture and Combustion at Dairies), Measure 2-L4 (Solar in Existing Non-Residential Buildings) and Measure 8-L1 (Idling Ordinance). These three measures, in addition to reducing GHG emissions, will save energy, improve air quality and public health in the county, and conserve natural resources.

On the state level, the RPS and the Pavley measures have the greatest potential to reduce emissions in the unincorporated county. Of the regional measures, those with the greatest impact are the CCA measure, the waste-to-energy measure, and the waste diversion measure.

Table 5.9-5 presents the individual GHG reduction measures that Sonoma County has selected for the CAP. For more information on the specifics of each measure, see Appendix C.

Sonoma County Green Business Program

Sonoma County Green Business is an award-winning program that has been verifying green businesses in the County for many years. The program ensures that businesses who want to be certified meet high standards of environmental performance. The standards that the program sets, in addition to reducing GHG emissions and helping the County meet its goal, ensure water and energy conservation, and reduce air pollutants that can cause health problems for certain populations.

Table 5.9-5. Unincorporated Sonoma County 2020 GHG Emissions Reductions by Measure

✓ = Local Measure (otherwise State or Regional)	2020 GHG Reductions

✓ = Local Measure (otherwise State or Regional)	2020 GHG Reductions
Measure 1-S1: Title 24 Standards for Commercial and Residential Buildings	4,821
Measure 1-S2: Lighting Efficiency and Toxics Reduction Act (AB 1109)	9,945
Measure 1-S3: Industrial Boiler Efficiency	345
Measure 1-R1: Community Energy Efficiency Retrofits for Existing Buildings	3,126
Measure 1-R2: Expand the Community Energy Efficiency Retrofits Program	5,744
Measure 1-L2: Outdoor Lighting ✓	392
Measure 1-L3: Shade Tree Planting ✓	11
Measure 1-L4: Co-Generation Facilities ✓	1
Goal 2: Increase Renewable Energy Use	**127,954**
Measure 2-S1: Renewables Portfolio Standard	85,487
Measure 2-S2: Solar Water Heaters	330
Measure 2-R1: Community Choice Aggregation	22,895
Measure 2-L2: Solar in Existing Residential Building ✓	5,402
Measure 2-L4: Solar in Existing Non-Residential Buildings ✓	13,839
Goal 3: Switch Equipment from Fossil Fuel to Electricity	**1,022**
Measure 3-R1: Stationary Fuel Switching Incentives	1,022
Goal 4: Reduce Travel Demand Through Focused Growth	**681**
Measure 4-L1: Mixed-Use Development in City Centers and Along Transit Corridors ✓	681
Measure 4-L3: Supporting Land Use Measures ✓	NQ
Goal 5: Encourage a Shift Toward Low-Carbon Transportation Options	**20,609**
Measure 5-R1: Improve and Increase Transit Service	-5
Measure 5-R2: Supporting Transit Measures	NQ
Measure 5-R3: Sonoma-Marin Area Rail Transit	NQ
Measure 5-R4: Trip Reduction Ordinance	2,516
Measure 5-R5: Supporting Measures for the Transportation Demand Management Program	NQ
Measure 5-R6: Reduced Transit Passes	2,330
Measure 5-R7: Alternative Travel Marketing & Optimize Online Service	1,864
Measure 5-R8: Safe Routes to School	6,336
Measure 5-R9: Car-sharing Program	NQ
Measure 5-R10: Bike Sharing Program	NQ

✓ = Local Measure (otherwise State or Regional)	2020 GHG Reductions
Measure 5-L1: Local Transportation Demand Management Program ✓	1,864
Measure 5-L2: Carpool-Incentives & Ride-Sharing Program ✓	3,634
Measure 5-L3: Guaranteed Ride Home ✓	NQ
Measure 5-L4: Supporting Bicycle/Pedestrian Measures ✓	NQ
Measure 5-L5: Traffic Calming ✓	518
Measure 5-L6: Parking Policies ✓	1,553
Measure 5-L7: Supporting Parking Policy Measures ✓	NQ
Goal 6: Increase Vehicle and Equipment Fuel Efficiency	**139,873**
Measure 6-S1: Pavley Emissions Standards for Passenger Vehicles and the Low Carbon Fuel Standard	129,432
Measure 6-S2: Advanced Clean Cars	3,545
Measure 6-S3: Assembly Bill 32 Vehicle Efficiency Measures	6,896
Goal 7: Encourage a Shift Toward Low-Carbon Fuels in Vehicles and Equipment	**7,032**
Measure 7-S1: Low Carbon Fuel Standard: Off-Road	2,621
Measure 7-R1: Shift Sonoma County (Electric Vehicles)	4,408
Measure 7-L1: Electric Vehicle Charging Station Program ✓	3
Measure 7-L3: Reduce Fossil Fuel Use in Equipment through Efficiency or Fuel Switching ✓	NQ
Goal 8: Reduce Idling	**6,582**
Measure 8-L1: Idling Ordinance ✓	6,473
Measure 8-L2: Idling Ordinance for Construction Equipment ✓	109
Goal 9: Increase Solid Waste Diversion	**8,305**
Measure 9-R1: Waste Diversion Goal	8,303
Measure 9-L1: Create Construction and Demolition Reuse and Recycling Ordinance ✓	3
Goal 10: Increase Capture and Use of Methane from Landfills	**12,323**
Measure 10-R1: Increase Landfill Methane Capture and Use for Energy	12,323
Goal 11: Reduce Water Consumption	**4,791**
Measure 11-R1: Countywide Water Conservation Support and Incentives	NQ
Measure 11-L1: Senate Bill SB X7-7 - Water Conservation Act of 2009* ✓	4,791
Goal 12: Increase Recycled Water and Greywater Use	**77**
Measure 12-R1: Recycled Water*	54
Measure 12-L1: Greywater Use* ✓	22

✓ = Local Measure (otherwise State or Regional)	2020 GHG Reductions
Goal 13: Increase Water and Wastewater Infrastructure Efficiency	**258**
Measure 13-R1: Infrastructure and Water Supply Improvement	105
Measure 13-R2: Wastewater Treatment Equipment Efficiency*	153
Goal 14: Increase Use of Renewable Energy in Water and Wastewater Systems	**391**
Measure 14-R1: Sonoma County Water Agency Carbon Free Water by 2015	391
Total State Measures	**243,420**
Total County Measures	**71,560**
Total Local Measures	**39,300**
Grand Total Emissions	**354,280**

*Measures reduce emissions in multiple sectors (i.e. water and energy)
NQ = not quantified

5.10.5 Municipal Greenhouse Gas Reduction Measures

Like the cities in Sonoma County, County government has recognized the need to reduce GHG emissions from municipal operations. In 2006, the County adopted its "Climate Protection Action Plan." The Plan includes measures to reduce energy and water consumption in County government buildings and reductions in fleet vehicle fuel consumption and use of lower-carbon fuels, including electric vehicles, and set a target of reducing emissions from County operations by 20% by 2010. Implementation of this plan has been ongoing since adoption and the reduction target has been met and exceeded.

Although municipal GHG reduction measures are not part of this countywide plan, the efforts of local communities are important and will continue in the future. Descriptions of potential municipal GHG reduction measures are provided in Appendix E as an informational resource.